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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,177	01/28/2004	Kyeong-Hwa Kang	JUN 105	9855

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EXAMINER	
ZEC, FILIP	

ART UNIT	PAPER NUMBER
3744	

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/765,177	KANG, KYEONG-HWA	
	Examiner	Art Unit	
	Filip Zec	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,5-8 and 10* is/are rejected.

7)☒ Claim(s) *2-4 and 9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/1/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1 and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,906,045 to Kim, in view of U.S. Patent 6,009,936 to Kubota et al. and U.S. Patent 6,840,314 to Rivis et al. In FIG. 6B, Kim discloses applicant's basic inventive concept, a condenser comprising a condensing tube (130) including a refrigerant inlet (one end of 130) formed at one end thereof, a refrigerant outlet (the other end of 130) formed at the other end thereof and a passage pipe (13), a cooling plate (140) having a groove (col 4, lines 27-31) on which the condensing tube is mounted, substantially as claimed with the exception of said condensing tube having a heat radiation protrusion formed on an outer circumference thereof, said cooling plate having a plurality of bent pieces formed protruding from left and right sides of the groove and a vent part including a plurality vent holes defined at a side portion of the bent part, for circulating external air, wherein the vent part comprises a first vent part having a plurality of depressed portions and a second vent part a plurality of protruded portions and wherein the cooling plate has a rectangle shaped through hole defined between a plurality of grooves. Kubota shows a condensing tube (11, FIG. 18) having a heat radiation protrusion (23, FIG. 18) formed on an outer circumference thereof, to be old in the refrigeration art. Rivis

shows a cooling plate (12, FIG. 4) having a plurality of bent pieces (16, FIG. 4) formed protruding from left and right sides of the groove (14, FIG. 3) and a vent part (16, FIG. 4) including a plurality vent holes (resulting from cutting and bending 16) defined at a side portion of the bent part, for circulating external air, wherein the vent part comprises a first vent part having a plurality of depressed portions (16 on one the side of 12a, FIG. 4) and a second vent part a plurality of protruded portions (16 on one the side of 12b, FIG. 4) and wherein the cooling plate has a rectangle shaped through hole (resulting from cutting and bending 16) defined between a plurality of grooves, to be old in the refrigeration art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Kubota and Rivis to modify the system of Kim, by adding heat radiation protrusions formed on an outer circumference of condensing tube in order to provide large radiating fin surface and improve cooling of said condenser tube (col 1, lines 44-45) and modifying the cooling plate by having a plurality of bent pieces formed protruding from left and right sides of the groove and a vent part including a plurality vent holes defined at a side portion of the bent part, for circulating external air, wherein the vent part comprises a first vent part having a plurality of depressed portions and a second vent part a plurality of protruded portions and wherein the cooling plate has a rectangle shaped through hole defined between a plurality of grooves in order to provide air flow, resulting in convective heat transfer and further cooling of said condensing tubes (col 2, lines 40-42).

3. Claims 8 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,906,045 to Kim, in view of U.S. Patent 6,009,936 to Kubota et al., U.S. Patent 6,840,314 to Rivis et al. and U.S. Patent Application Publication US 2004/0256093 A1 to

Romero Beltran. In FIG. 6B, Kim discloses applicant's basic inventive concept, a condenser comprising a condensing tube (130) including a refrigerant inlet (one end of 130) formed at one end thereof, a refrigerant outlet (the other end of 130) formed at the other end thereof and a passage pipe (13), a cooling plate (140) having a groove (col 4, lines 27-31) on which the condensing tube is mounted, substantially as claimed with the exception of said condensing tube having a heat radiation protrusion formed on an outer circumference thereof, said cooling plate having a plurality of bent pieces formed protruding from left and right sides of the groove and a vent part including a plurality vent holes defined at a side portion of the bent part, for circulating external air, wherein the vent part comprises a first vent part having a plurality of depressed portions and a second vent part a plurality of protruded portions and wherein the cooling plate has a rectangle shaped through hole defined between a plurality of grooves and stating that the cooling plate is bent in a multi-layer, hexadronal shaped structure of a three dimension. Kubota shows a condensing tube (11, FIG. 18) having a heat radiation protrusion (23, FIG. 18) formed on an outer circumference thereof, to be old in the refrigeration art. Rivis shows a cooling plate (12, FIG. 4) having a plurality of bent pieces (16, FIG. 4) formed protruding from left and right sides of the groove (14, FIG. 3) and a vent part (16, FIG. 4) including a plurality vent holes (resulting from cutting and bending 16) defined at a side portion of the bent part, for circulating external air, wherein the vent part comprises a first vent part having a plurality of depressed portions (16 on one the side of 12a, FIG. 4) and a second vent part a plurality of protruded portions (16 on one the side of 12b, FIG. 4) and wherein the cooling plate has a rectangle shaped through hole (resulting from cutting and bending 16) defined between a plurality of grooves, to be old in the refrigeration art. Romero Beltran shows a cooling plate (210', FIG. 12), bent in a

multi-layer, hexadronal shaped structure (see FIG. 12) of a three dimension to be old in refrigeration art. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made from the teaching of Kubota, Rivis and Romero Beltran to modify the system of Kim, by adding heat radiation protrusions formed on an outer circumference of condensing tube in order to provide large radiating fin surface and improve cooling of said condenser tube (col 1, lines 44-45), modifying the cooling plate by having a plurality of bent pieces formed protruding from left and right sides of the groove and a vent part including a plurality vent holes defined at a side portion of the bent part, for circulating external air, wherein the vent part comprises a first vent part having a plurality of depressed portions and a second vent part a plurality of protruded portions and wherein the cooling plate has a rectangle shaped through hole defined between a plurality of grooves in order to provide air flow, resulting in convective heat transfer and further cooling of said condensing tubes (col 2, lines 40-42) and having said cooling plate bent in a multi-layer, hexadronal shaped structure of a three dimension in order to increase the heat surface area in small spatial requirements.

Allowable Subject Matter

4. Claims 2-4 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent 5,513,432 to Sasaki, Kenichi et al. teaches a heat exchanger and method for manufacturing the same.

U.S. Patent 2,768,258 to Guyton, Robert H. teaches a refrigerator condenser.

U.S. Patent 5,097,897 to Watanabe, Masataka et al. teaches a heat-exchanging device.

U.S. Patent 4,055,162 to Gonzalez, Ed teaches a solar energy collector.

U.S. Patent 5,983,995 to Shutou, Akimi et al. teaches a radiator.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Filip Zec whose telephone number is (571) 272-4815. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on 571-272-4834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Filip Zec
Examiner
Art Unit 3744

CHERYL TYLER
SUPERVISORY PATENT EXAMINER

FZ